

PUBLICATIONS OF THOMAS KENNETH WOOD (1942–2002)

LEWIS L. DEITZ AND CHARLES R. BARTLETT

(LLD) Department of Entomology, North Carolina State University, Raleigh, NC 27695-7613 (e-mail: lewis_deitz@ncsu.edu); (CRB) Department of Entomology and Applied Ecology, 250 Townsend Hall, University of Delaware, 531 South College Avenue, Newark, DE 19717-1303 (e-mail: 02542@udel.edu)

Abstract.—This annotated bibliography lists the publications to date of Thomas K. Wood, late Professor of Entomology at the University of Delaware, Newark. Of 52 published works, 50 are on Tom's beloved treehoppers (Insecta: Hemiptera: Membracidae). Wood's dissertation and three other unpublished works are also listed. Additionally, future publications based on collaborative efforts in progress will likely bear his name. A chronological index to Wood's contributions is included.

Key Words: Thomas K. Wood, publications, bibliography, treehoppers, Membracidae, *Enchenopa*

The life and scientific achievements of Professor Tom Wood (Fig. 1) were fittingly documented by Kelley Tilmon (2002). Although strongly focused on the family Membracidae (treehoppers), Tom's "research spanned an amazing range of biological disciplines" (Tilmon 2002), including anatomy, physiology, molecular and morphological systematics, ecology, genetics, evolution, biogeography, behavioral and social biology, and life history patterns.

Dr. Tilmon also organized a symposium entitled "Populations, Species, and Phylogenies: Evolution in Insect-Plant Systems (in Memory of Thomas K. Wood)" for the 2003 National Meeting of the Entomological Society of America in Cincinnati, Ohio.

As a further tribute to the significance and lasting value of Tom's contributions, we here present a comprehensive listing of his works arranged alphabetically by author (Table 1 gives an index by year). At the time of his death, Tom had several collaborative research projects in progress and thus a number of future papers will also

likely bear his name, notably an ongoing field experiment on sympatric speciation (initiated in 1995) and an extensive molecular phylogeny of the Membracidae. A copy of each of the 52 publications and 4 unpublished manuscripts listed is held in Deitz's collection of literature on treehoppers (Deitz and Kopp 1987, Deitz 1989)—54 works are on membracids and 2 early papers are on pesticide residues in forage crops. Wood's dissertation and many subsequent papers treated "*Enchenopa binotata*," which he ultimately demonstrated to be a complex of at least nine biologically distinct sibling species. Based on this profusion of work, the *Enchenopa binotata* species complex has become a model system for the study of evolution and sympatric speciation (Futuyma 1999).

Tom's was a life cut short, but lived to the fullest. He jumped at every chance to collect or talk about treehoppers, whether in the U.S. or abroad (Fig. 1 [Cardiff, Wales]). In 1993, Tom initiated a small informal gathering of membracid workers in

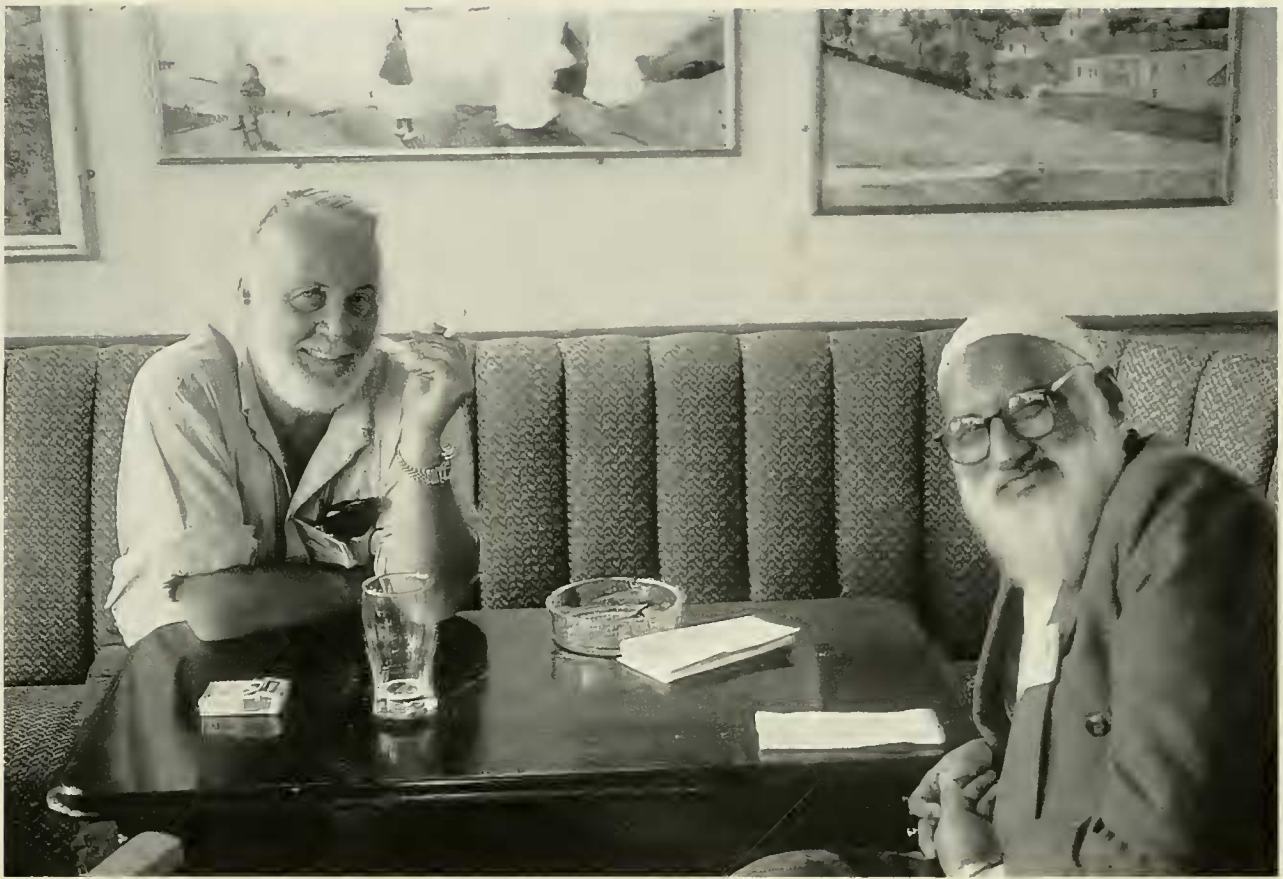


Fig. 1. Treehopper workers Tom Wood and Imtiaz Ahmad (of Karachi, Pakistan) at the 10th International Auchenorrhyncha Congress, September 1999, Cardiff, Wales.

the Eastern United States. We were fortunate to be among those invited to join the group at the University of Delaware (Fig. 2). In subsequent years, the aggregation of “Membraskateers” moved to Little Orleans, Allegany County, Maryland, where it grew larger and became an annual tradition. Tom’s colleagues and students, including all who gathered at Little Orleans, will long be inspired by his enthusiasm for science and for everything related to treehoppers.

BIBLIOGRAPHY OF T. K. WOOD

- Guttman, S. I., T. K. Wood, and A. A. Karlin. 1980. Genetic differentiation along host plant lines in the sympatric *Enchenopa binotata* Say complex (Homoptera: Membracidae), p. 224. In University of British Columbia. Second International Congress of Systematic and Evolutionary Biology, Vancouver, B.C., Canada, July 17–24, 1980. University of British Columbia, Vancouver, B.C., Canada. i + 441 pp. [abstract].
- Guttman, S. I., T. K. Wood, and A. A. Karlin. 1981. Genetic differentiation along host plant lines in the sympatric *Enchenopa binotata* Say complex (Homoptera: Membracidae). *Evolution* 35(2): 205–217.
- Keese, M. C. and T. K. Wood. 1991. Host-plant mediated geographic variation in the life history of *Platycotis vittata* (Homoptera: Membracidae). *Ecological Entomology* 16(1): 63–72.
- Lin, C. P. and T. K. Wood. 2002. Molecular phylogeny of the North American *Enchenopa binotata* (Homoptera: Membracidae) species complex. *Annals of the Entomological Society of America* 95(2): 162–171 [notes on *Enchenopa*, *Campylenchia*, and *Enchophyllum*].
- Nault, L. R., T. K. Wood, and A. M. Goff. 1974. Treehopper (Membracidae) alarm pheromones. *Nature (London)* 249(5455): 387–388 [on *Entylia concava* (as *bactriana*), *Publilia concava*, and *Vanduzeeia* (as *Vanduzeeia*) *arquata*].
- Olmstead, K. L. and T. K. Wood. 1990a. Altitudinal patterns in species richness of Neotropical treehoppers (Homoptera: Membracidae): the role of ants. *Proceedings of the Entomological Society of Washington* 92(3): 552–560 [list of 84 membracid genera in Columbia, Appendix A].
- Olmstead, K. L. and T. K. Wood. 1990b. The effect of clutch size and ant attendance on egg guarding by *Entylia bactriana* (Homoptera: Membracidae). *Psyche* 97(1–2): 111–120 [on *Entylia concava* (as *bactriana*), with notes on *Publilia concava* and *P. reticulata*].
- Pratt, G. F., S. Datz, and T. K. Wood. 1990 [unpublished]. Morphological and electrophoretic analy-



Fig. 2. First annual gathering of Eastern U.S. treehopper workers organized by T. K. Wood, at his home in Newark, Delaware, 14 May 1993. Top row (left to right): Tom Greene, Tom Wood, Rex Cocroft, Stuart McKamey, Chris Dietrich; bottom row: Lewis Deitz, Kelley Tilmon, Jason Cryan, Charles Bartlett, Diana McPherson [later McPherson Bartlett].

ses using the same individuals of the different host races of *Enchenopa binotata*, pp. [75]. In Abstracts: Combined Meetings of the 7th International Auchenorrhyncha Congress and the 3rd International Workshop on Leafhoppers and Plant-hoppers of Economic Importance, August 13–17, 1990, Wooster, Ohio, USA [97 unnumbered pages; abstract; disclaimer on first page indicates this work is not to be considered published].

- Pratt, G. [F.] and T. K. Wood. 1992. A phylogenetic analysis of the *Enchenopa binotata* species complex (Homoptera: Membracidae) using nymphal characters. *Systematic Entomology* 17(4): 351–357 [with notes on *Campylenchia latipes*, *Enchenopa brevis*, and *E. porrecta*].
- Pratt, G. [F.] and T. K. Wood. 1993. Genitalic analysis of males and females in the *Enchenopa binotata* (Say) complex (Membracidae: Homoptera). *Proceedings of the Entomological Society of Washington* 95(4): 574–582 [with notes on *Campylenchia latipes* and *Enchenopa ignidorsum*].
- Tallamy, D. W. and T. K. Wood. 1986. Convergence patterns in subsocial insects. *Annual Review of Entomology* 31: 369–390 [notes on Aetalionidae, Membracidae, *Publilia reticulata*, and *Entylia concava* (as *bactriana*)].
- Tilmon, K. J., T. K. Wood, and J. D. Pesek. 1998. Genetic variation in performance traits and the po-

tential for host shifts in *Enchenopa* treehoppers (Homoptera: Membracidae). *Annals of the Entomological Society of America* 91(4): 397–403 [discussion of *E. binotata* species complex on novel host plants in the genus *Viburnum*].

- Wood, T. K. 1968 [unpublished]. The Chemical Composition, Host Plant Variation and Overwintering Survival Value of the Egg Froth of the Membracid, *Enchenopa binotata* Say. Ph.D. Dissertation, Cornell University, Ithaca, New York. iv + 88 pp.
- Wood, T. K. 1969. The chemical composition, host variation and overwintering survival value of the egg froth of the membracid, *Enchenopa binotata* Say. *Dissertation Abstracts (B)*29(12): 4700 [abstract from Wood 1968, above].
- Wood, T. K. 1974. Aggregating behavior of *Umbonia crassicornis* (Homoptera: Membracidae). *Canadian Entomologist* 106(2): 169–173 [with notes on 11 other membracid genera].
- Wood, T. K. 1975a. Studies on the function of the membracid pronotum (Homoptera) II. Histology. *Proceedings of the Entomological Society of Washington* 77(1): 78–82 [on *Umbonia crassicornis*].
- Wood, T. K. 1975b. Defense in two pre-social membracids (Homoptera: Membracidae). *Canadian Entomologist* 107(11): 1227–1231 [on *Platycotis vittata* and *Umbonia crassicornis*].

- Wood, T. K. 1976a. Alarm behavior of brooding female *Umbonia crassicornis* (Homoptera: Membracidae). *Annals of the Entomological Society of America* 69(2): 340–344 [with notes on *Enchenopa*, *Entylia*, *Platycotis*, *Publilia*, and *Vanduzee* (as *Vanduzeeea*)].
- Wood, T. K. 1976b. Biology and presocial behavior of *Platycotis vittata* (Homoptera: Membracidae). *Annals of the Entomological Society of America* 69(5): 807–811 [with notes on *Umbonia crassicornis*].
- Wood, T. K. 1977a. Role of parent females and attendant ants in the maturation of the treehopper, *Entylia bactriana* (Homoptera: Membracidae). *Sociobiology* 2(4): 257–272 [on *Entylia concava* (as *bactriana*), with notes on *Platycotis vittata* and *Umbonia crassicornis*].
- Wood, T. K. 1977b. Defense in *Umbonia crassicornis*: role of pronotum and adult aggregations (Homoptera: Membracidae). *Annals of the Entomological Society of America* 70(4): 524–528.
- Wood, T. K. 1978. Parental care in *Guayaquila compressa* Walker (Homoptera: Membracidae). *Psyche* 85(1): 135–145 [on *Aconophora* (as *Guayaquila*) *compressa*, with notes on *Entylia*, *Platycotis*, and *Umbonia*].
- Wood, T. K. 1979. Sociality in the Membracidae (Homoptera). *Miscellaneous Publications of the Entomological Society of America* 11(3): 15–22 [with notes on *Aconophora* (as *Guayaquila*), *Cladonota* (as *Sphongophorus*), *Enchenopa*, *Entylia*, *Platycotis*, and *Umbonia*].
- Wood, T. K. 1980. Divergence in the *Enchenopa binotata* Say complex (Homoptera: Membracidae) effected by host plant adaptation. *Evolution* 34(1): 147–160.
- Wood, T. K. 1982a. Selective factors associated with the evolution of membracid sociality, pp. 175–179. In Breed, M. D., C. D. Michener, and H. E. Evans, eds. *The Biology of Social Insects*. (Proceedings of the Ninth Congress of the International Union for the Study of Social Insects, Boulder, Colorado, Aug. 1982). Westview Press, Boulder, Colorado. xii + 419 pp. [general discussion of the influence of predators, ant mutualism, host plant utilization, and geography].
- Wood, T. K. 1982b. Ant-attended nymphal aggregations in the *Enchenopa binotata* complex (Homoptera: Membracidae). *Annals of the Entomological Society of America* 75(6): 649–653.
- Wood, T. K. 1983a. *Umbonia crassicornis* (bicho espino, thorn bug, treehopper), pp. 773–775. In Janzen, D. H., ed. *Costa Rican Natural History*. University of Chicago Press, Chicago. xi + 816 pp. [with notes on other membracids].
- Wood, T. K. 1983b. Brooding and aggregating behavior of the treehopper, *Umbonia crassicornis*. *National Geographic Society Research Reports* (Washington, D. C.) 15: 753–758 [with notes on *Entylia*, *Platycotis*, and *Publilia*].
- Wood, T. K. 1984. Life history patterns of tropical membracids (Homoptera: Membracidae). *Sociobiology* 8(3): 299–344 [notes on Aetalionidae (2 spp.). Membracidae (124 spp., including 2 spp. of Nicomiinae (as Nicomiidae))].
- Wood, T. K. 1987a. Host plant shifts and speciation in the *Enchenopa binotata* Say complex, pp. 361–368. In Wilson, M. R., and L. R. Nault, eds. *Proceedings of 2nd International Workshop on Leafhoppers and Planthoppers of Economic Importance*. CAB International Institute of Entomology, London. xiii + 368 pp.
- Wood, T. K. 1987b. Membracid life histories mediated by plant phenology, p. 51. In 6th Auchenorrhyncha Meeting, Turin, Italy, September 7–11, 1987, Abstracts. Consiglio Nazionale delle Ricerche, Incremento Produttività Risorse Agricole (CNR-IPRA), Torino. 52 pp. [abstract; *Enchenopa binotata* species complex (as “treehoppers”)].
- Wood, T. K. 1987c. Speciation of the *Enchenopa binotata* Say complex (Homoptera: Membracidae). *Transactions of the Delaware Academy of Science* 13: 26–34.
- Wood, T. K. 1988. Consequences of membracid life histories mediated by plant phenology, pp. 247–253. In Vidano, C., and A. Arzone, eds. 6th Auchenorrhyncha Meeting, Turin, Italy, September 7–11, 1987, Proceedings. Consiglio Nazionale delle Ricerche, Incremento Produttività Risorse Agricole (CNR-IPRA). Torino. 652 pp. [*Enchenopa binotata* species complex].
- Wood, T. K. 1993a. Diversity in the New World Membracidae. *Annual Review of Entomology* 38: 409–435 [on Aetalionidae (in part as Biturritiidae) and Membracidae].
- Wood, T. K. 1993b. Chapter 18. Speciation of the *Enchenopa binotata* complex (Insecta: Homoptera: Membracidae), pp. [299]–317. In Lees, D. R., and D. Edwards, eds. *Evolutionary Patterns and Processes*. Linnean Society Symposium Series 14. The Linnean Society of London & Academic Press, London. [ix] + 325 pp.
- Wood, T. K. 1997. A long-term experiment in speciation. p. 60. In Fletcher, M. J., M. [F.] Day, P. [S.] Gillespie, M. [M.] Stevens, and M. [S.] Moulds, eds. *Program & Abstract Book: 9th International Auchenorrhyncha Congress, 17–21 February 1997, Sydney, Australia*. 76 pp. [abstract; investigation of speciation through forcing *Enchenopa* females to oviposit on novel hosts].
- Wood, T. K., E. J. Armbrust, G. G. Gyrisco, W. H. Gutenmann, and D. J. Lisk. 1966. The presence and persistence of heptachlor epoxide and dieldrin residues on forage crops in New York. *Journal of Economic Entomology* 59(1):131–132 [with notes

- on the alfalfa weevil, *Hypera postica* (Coleoptera: Curculionidae)].
- Wood, T. K. and S. Datz. 1990 [unpublished]. The *Enchenopa binotata* Say complex: experimentally induced host plants shifts, pp. [95]. In Abstracts: Combined Meetings of the 7th International Auchenorrhyncha Congress and the 3rd International Workshop on Leafhoppers and Planthoppers of Economic Importance, August 13–17, 1990, Wooster, Ohio, USA. [97 unnumbered pages; abstract; disclaimer on first page indicates this work is not to be considered published].
- Wood, T. K. and R. Dowell. 1984. Sex ratio in *Umbonia crassicornis* Amyot and Serville (Homoptera: Membracidae). *American Midland Naturalist* 112(1): 58–66.
- Wood, T. K. and R. Dowell. 1985. Reproductive behavior and dispersal in *Umbonia crassicornis* (Homoptera: Membracidae). *Florida Entomologist* 68(1): [151]-158 [with Spanish summary].
- Wood, T. K. and S. [I.] Guttman. 1980. Speciation in the *Enchenopa binotata* complex (Homoptera: Membracidae), p. 10. In XVI International Congress of Entomology: Abstracts: Kyoto, Japan, 3–9 August 1980. Kyoto, Japan. 480 pp. [conference abstract # 1S-4.24; alternate citation: International Congress of Entomology (Kyoto, Japan)16: 10].
- Wood, T. K. and S. I. Guttman. 1981. Chapter 3. The role of host plants in the speciation of treehoppers: an example from the *Enchenopa binotata* complex, pp. 39–54. In Denno, R. F. and H. Dingle, eds. *Insect Life History Patterns: Habitat and Geographic Variation*. Springer-Verlag, New York. x + 225 pp.
- Wood, T. K. and S. I. Guttman. 1982. Ecological and behavioral basis for reproductive isolation in the sympatric *Enchenopa binotata* complex (Homoptera: Membracidae). *Evolution* 36(2): 233–242.
- Wood, T. K. and S. I. Guttman. 1983. *Enchenopa binotata* complex: sympatric speciation? *Science* (Washington, D.C.) 220(4594): 310–312.
- Wood, T. K. and S. I. Guttman. 1985. A new member of the *Enchenopa binotata* Say complex on tulip tree (*Liriodendron tulipifera*). *Proceedings of the Entomological Society of Washington* 87(1): 171–175.
- Wood, T. K., S. I. Guttman, and M. C. Taylor. 1984. Mating behavior of *Platycotis vittata* (Fabricius) (Homoptera: Membracidae). *American Midland Naturalist* 112(2): 305–313.
- Wood, T. K., G. G. Gyrisco, W. H. Gutenmann, and C. M. Edmonds. 1966. The presence and persistence of dieldrin in forage crops from soil treatment for alfalfa snout beetle control. *Journal of Economic Entomology* 59(2): 472–473 [*Otiiorhynchus ligustici*, as "*Brachyrhinus ligustici*," (Coleoptera: Curculionidae)].
- Wood, T. K. and M. C. Keese. 1990. Host-plant-induced assortative mating in *Enchenopa* treehoppers. *Evolution* 44(3): 619–628 [notes on *E. binotata* species complex].
- Wood, T. K. and M. K. Kruluts. 1990 [unpublished]. Host plant shifts in the *Enchenopa binotata* Say complex promoted by parasitoids: an [sic] hypothesis [this unpublished manuscript was cited by Jaenike (1990: 273)].
- Wood, T. K. and G. K. Morris. 1974. Studies on the function of the membracid pronotum (Homoptera). I. Occurrence and distribution of articulated hairs. *Canadian Entomologist* 106(2): 143–148 [notes on 65 genera].
- Wood, T. K. and K. L. Olmstead. 1984. Latitudinal effects on treehopper species richness (Homoptera: Membracidae). *Ecological Entomology* 9(1): 109–115 [general discussion with notes on *Antianthe*, *Enchenopa binotata* species complex, and Smiliini].
- Wood, T. K., K. L. Olmstead, and S. I. Guttman. 1990. Insect phenology mediated by host-plant water relations. *Evolution* 44(3): 629–636 [on *Enchenopa binotata* species complex].
- Wood, T. K. and R. L. Patton. 1971. Egg froth distribution and deposition by *Enchenopa binotata* (Homoptera: Membracidae). *Annals of the Entomological Society of America* 64(5): 1190–1191.
- Wood, T. K. and J. D. Pesek. 1992. Pronotal shape: a source of confusion or panacea in systematic studies of treehoppers (Homoptera: Membracidae)?, pp. 349–384. In Sorensen, J. T., and R. Footit, eds. *Ordination in the Study of Morphology, Evolution and Systematics of Insects: Applications and Quantitative Genetic Rationals*. Elsevier, Amsterdam. viii + 418 pp. [on genera and species of Smiliini, including notes on 168 species (Appendix 1)].
- Wood, T. K. and K. J. Tilmon. 1993. The plant phenology hypothesis of speciation through host plant shifts: a test, pp. 108–109. In Drosopoulos, S., P. V. Petrakis, M. F. Claridge, and P. W. F. de Vrijer, eds. *Proceedings of the 8th Auchenorrhyncha Congress*, Delphi, Greece, 9–13 August 1993. [Auchenorrhyncha Congress], Delphi, Greece. iv + 112 pp. [on *Enchenopa binotata* species complex].
- Wood, T. K., K. J. Tilmon, A. B. Shantz, C. K. Harris, and J. Pesek. 1999. The role of host-plant fidelity in initiating insect race formation. *Evolutionary Ecology Research* 1(3): 317–332 [on *Enchenopa binotata* species complex].

CHRONOLOGICAL INDEX TO WOOD'S PUBLICATIONS

Year	Author(s)
1966	Wood, Armbrust, Gyrisco, Guten-

- mann & Lisk; Wood, Gyrisco, Guttenmann & Edmonds
 1968 Wood [unpublished dissertation]
 1969 Wood
 1971 Wood & Patton
 1974 Nault, Wood & Goff; Wood; Wood & Morris
 1975 Wood, a-b
 1976 Wood, a-b
 1977 Wood, a-b
 1978 Wood
 1979 Wood
 1980 Guttman, Wood & Karlin; Wood; Wood & Guttman
 1981 Guttman, Wood & Karlin; Wood & Guttman
 1982 Wood, a-b; Wood & Guttman
 1983 Wood, a-b; Wood & Guttman
 1984 Wood; Wood & Dowell; Wood, Guttman & Taylor; Wood & Olmstead
 1985 Wood & Dowell; Wood & Guttman
 1986 Tallamy & Wood
 1987 Wood, a-c
 1988 Wood
 1990 Olmstead & Wood, a-b; Pratt, Datz & Wood [unpublished abstract]; Wood & Datz [unpublished abstract]; Wood & Keese; Wood & Kruluts [unpublished manuscript]; Wood, Olmstead & Guttman
 1991 Keese & Wood
 1992 Pratt & Wood; Wood & Pesek
 1993 Pratt & Wood; Wood, a-b; Wood & Tilmon
 1997 Wood
 1998 Tilmon, Wood & Pesek
 1999 Wood, Tilmon, Shantz, Harris & Pesek
 2002 Lin & Wood

ACKNOWLEDGMENTS

We especially appreciate the comments of Tom's wife, Barbara Wood, and Chris-

topher J. DeHeer, Christopher H. Dietrich, Kevin V. Donohue, Judy Hough-Goldstein, Herbert H. Neunzig, Mark J. Rothschild, Douglas W. Tallamy, K. J. Tilmon, and Matthew S. Wallace, who reviewed this tribute. Additionally, M. S. Wallace and K. V. Donohue assisted in verifying references, and K. J. Tilmon kindly provided valuable clues that allowed us to retrieve two early works on pesticide residues and a copy of Tom's curriculum vitae that listed many of his treehopper publications. This work was supported by the National Science Foundation (under Grant Nos. DEB-9815867 and DEB-9978026), the North Carolina Agricultural Research Service, and the University of Delaware (Department of Entomology and Applied Ecology).

LITERATURE CITED

- Deitz, L. L. 1989. Bibliography of the Membracoidea (Homoptera: Aetalionidae, Biturritiidae, Membracidae, and Nicomiidae) 1981–1987. North Carolina Agricultural Research Service Technical Bulletin 290: [1]- 31.
 Deitz, L. L. and D. D. Kopp. 1987. Bibliography of the Membracoidea (Homoptera: Aetalionidae, Biturritiidae, Membracidae, and Nicomiidae) 1956–1980. North Carolina Agricultural Research Service Technical Bulletin 284: [i–iii], 1–39.
 Futuyuma, D. J. 1998. *Evolutionary Biology*. 3rd edit. Sinauer Associates, Sunderland, Massachusetts. xviii + 763 + [64] pp.
 Jaenike, J. 1990. Host specialization in phytophagous insects. *Annual Review of Ecology and Systematics* 21: 243–273.
 Tilmon, K. J. 2002. Thomas K. Wood. *American Entomologist* 48: 244–245 [obituary].

ADDENDUM

The authors learned of the following work too late for inclusion above:

- Lin, C. P., B. N. Danforth, and T. K. Wood. In press. Molecular phylogenetics and evolution of maternal care in membracine treehoppers. *Systematic Biology*.